

ABSTRACT

An NIR spectroscopy fluid analyzing system using a series of LED's, each having its own preselected center wavelength, as illumination sources. These wavelengths have overlapping spectral widths, such that the measurement covers a broad spectrum. The LED's illuminate the fluid sample sequentially, and subsequently the transmission absorbance through the sample and the reflectance or scattering from the sample is measured for the wavelength range of each LED. The measurements are performed using photodetectors. The concentrations of component parts of the fluid are expressed in the form of a polynomial, which is a function of the measured transmitted and/or reflected intensities, and of empirical coefficients, which are extracted by prior statistical analysis on measured intensities obtained from a large number of test samples having known concentrations of the component. A novel sample chamber, capable of performing optical absorption measurements on a flowing sample of fluid, is described.